This invention relates to methods of cleaning grindstones, particularly to methods of cleaning grindstones as are used in the manufacture of wood pulp and similar material. The invention further relates to devices for cleansing of grindstones, particularly of grindstones as are used in the manufacture of wood pulp and similar material.

One of the problems frequently encountered in the manufacture of wood pulp and other pulp is that during the grinding process the volume of production gradually decreases and also the quality of the produced wood pulp experiences a change, particularly a certain reduction in the freeness of the wood pulp is generally observed. These changes are caused by increasing dullness of the grindstones. The length of the period of time in which the grindstone is dulled and decreases in efficiency is controlled by many factors. Experience has shown that the quality of the grindstone is the most important one.

There are primarily two properties of the grindstone which determine the decreasing keeness of the grindstone, to wit, the resistance of the stone against abrasion and its tendency to accumulate alien material such as fibers, dust, resin, etc. in the recesses of the grinding surface. The abrasion or grinding down of the grinding particles takes place rapidly and easily with soft stones. If ceramic stones containing carborundum (cristalline silicon carbide) or alundum particles are used, the grindstone will retain it efficiency for a longer period as such particles are sitting very tightly in the stone and the hardness of these materials is so high that it is nearly impossible to dislocate them and that they are very little

subject to abrasion during the grinding process. The wood pulp will change its properties very appreciably already within one hour when soft grindstones are employed while the properties of the wood pulp are retained considerably longer when hard ceramic stones are employed. The tendency of the grindstone to accumulate wood pulp and alien substances such as fibers can be counteracted only to a slight degree by the application of a water stream under high pressure.

To obtain a substantially constant quantity and quality of wood pulp it is already known to press a sharpening roll against a rotating grindstone and to rotate the roll by the rotation of the stone. The surface of the sharpening roll is usually milled or serrated. The effect of the sharpening roll is to grind down a portion of the stone so that a new layer of grinding surface is exposed. In addition, the grinding of the stone surface will remove any wood pulp and other substance accumulated in the recesses of the stone. However, this method has the disadvantage that the properties of the produced wood pulp are changed by the renewal of the grinding surface and also the material of the grindstone is partly wasted.

One of the objects of the invention is to provide means of removing material accumulated in the recesses of the stone between the grinding particles without affecting the grinding particles proper. Such an arrangement has the advantage that quantity and quality of the wood pulp remain substantially constant and that a waste of stone material is avoided.

Another object of the invention is to provide

means by which a more thorough cleaning of the grinding surface of the stone can be achieved than is possible with the methods and devices, as hitherto known.

According to a now preferred embodiment of the invention a substantially cylindrical brush having elastic bristles is pressed against the grinding surface of the stone with the brush axis positioned either parallel or slanted relative to the generating element or generant of the stone surface. The brush is rotated either by friction or by means of a drive means. If desired, breaking means may be provided. As a result, the brushes are bent and pressed into the recesses between the grinding particles so that they will sweep or press out any impurities accumulated in these recesses without dislocating the grinding particles. In case, separate drive means are provided for rotating the brush, it is possible to give the brush a selected faster or slower rotation than if the brush is rotated merely by reason of the stone rotation. By slanting the brush axis relative to the grindstone generant, an additional movement can be imparted to the individual bristles during the rotation of the brush, thereby further increasing the cleansing effect.

Other and further objects, features and advantages of the invention will be pointed out hereinafter and set forth in the appended claims forming part of the application.

In the accompanying drawings several now preferred embodiments of the invention are shown by way of illustration and not by way of limitation.

In the drawings:

Fig. 1 is an elevational side view of a cleansing

device according to the invention, and

Fig. 2 is a modification of the cleansing device according to Fig. 1.

Referring now to Fig. 1 in detail, there is shown a portion of a grindstone 1 rotating in counter-clockwise direction as indicated by arrow 2. A substantially cylindrical brush 3 having elastic bristles, preferably made of steel or other acid resistant material, is rotatably supported on one end of a rod 4. This rod is axially slidably mounted in two spaced bearings 5 and 6, which in turn are supported on a carrier 7. The carrier can be displaced in axial direction by means of a crank handle 8 and a threaded rod (not shown) or other conventional means known for such purpose. Rod 4 is partially encompassed by a coil spring 9 abutting with one end against bearing 6 and with the other end against a collar 10 adjustably fastened on rod 4. As a result, brush 3 is resiliently urged against the grinding surface of grindstone 1.

It will be evident that the pressure with which brush 3 is pressed against the stone surface can be adjusted either by means of spring 9 and collar 10 or by displacement of carrier 7. Carrier 7 is supported by a second carrier 11. The second carrier is also operated by means of a crank handle 12 and serves to displace carrier 7 and with it brush 3 in a direction vertically to the displacement direction of carrier 7 so that brush 3 can be adjusted in a direction longitudinally relative to the cylindrical surface of the grindstone.

Rod 4 is shown in Fig. 1 as being downwardly bent. However, it is of course also possible to give the

rod another shape, for instance the rod may be straight.

The construction of carrier 11 is conventional and need not be described here in detail.

The construction of the device according to Fig. 2 is similar to that of Fig. 1, with the exception, that instead of an axially displaceable rod 4, a two-arm lever 4' is provided pivotal about a pivot 15 supported by a bracket 13. One arm of lever 4' supports brush 3 and the other a weight 14. As will be apparent, the pressure of brush 3 against stone 1 can be conveniently adjusted by changing the position of weight 14.

While the invention has been described in detail with respect to certain preferred examples and embodiments it will be understood by those skilled in the art after understanding the invention that various changes and modifications may be made without departing from the spirit and scope of the invention, and it is intended therefore in the appended claims, to cover all such changes and modifications.

What is claimed as new and desired to be secured by Letters Patent is:

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A method of brushing out impurities accumulating in the recesses of the granular porous surface of rotatable grindstones as used for grinding wood pulp and similar material, comprising the steps of pressing a rotatably supported, substantially cylindrical, cleansing brush having radially extending elastic bristles against a grindstone with the brush axis disposed parallel to the generant of the stone so as to rotate the brush, by friction alone, oppositely to the direction of rotation of the grindstone, the said brush being constructed as to the cross-section and stiffness of the bristles so that these bristles are caused to engage the recesses between the grinding particles of the stone, upon rotation of the stone and the brush, to sweep accumulated impurities out of said recesses without loosening the grinding particles proper.

2. A cleansing device for cleaning rotatable grindstones having a substantially cylindrical porous and granular grinding surface formed by grinding particles, as used in the manufacture of wood pulp and similar material, comprising a substantially cylindrical brush having radially extending elastic bristles, support means rotatably supporting the brush, first means supporting the brush support means and constructed for displacement substantially vertically to the stone axis for placing the said first means and the brush in a position in which the bristles are pressed against the grinding surface of the stone with the brush axis substantially parallel to the stone axis, and second means supporting the first means and constructed for displacing the first means and the brush substantially parallel to the grindstone axis, whereby rotation of the stone in one direction causes, solely through frictional contact of the bristles with the stone, rotation of the

B

brush in the opposite direction, the opposite rotation thus induced causing said bristles to engage the recesses between the grinding particles of the stone and sweep accumulated impurities out of said recesses without loosening the grinding particles.

3. A cleansing device for cleaning rotatable grindstones having a substantially cylindrical porous and granular grinding surface formed by grinding particles as used in the manufacture of wood pulp and similar material comprising a substantially cylindrical brush having radially extending elastic bristles, a rod rotatably supporting the brush, support means supporting said rod axially slidably toward the stone axis, spring means biasing the rod with the brush toward the stone for placing the brush in a position in which the bristles are pressed against the grinding surface of the stone, whereby rotation of the stone in one direction causes, solely through frictional contact of the bristles with the stone, rotation of the brush in the opposite direction, the opposite rotation thus induced causing said bristles to engage the recesses between the grinding particles of the stone and sweep accumulated impurities out of said recesses without loosening the grinding particles.

4. A cleansing device for cleaning rotatable grindstones having a substantially cylindrical porous and granular grinding surface formed by grinding particles as used in the manufacture of wood pulp and similar material comprising a substantially cylindrical brush having radially extending elastic bristles, a rod rotatably supporting the brush, support means pivotally supporting an intermediate point of said rod to form a two-arm lever, one of the lever arms rotatably supporting the brush, a

IM

C

weight slidably supported on the other arm and biasing the brush toward the stone axis for placing the brush in a position in which the bristles are pressed against the grinding surface of the stone, whereby rotation of the stone in one direction causes, solely through frictional contact of the bristles with the stone, rotation of the brush in the opposite direction, the opposite rotation thus induced causing said bristles to engage the recesses between the grinding particles of the stone and sweep accumulated impurities out of said recesses without loosening the grinding particles.

IM

C

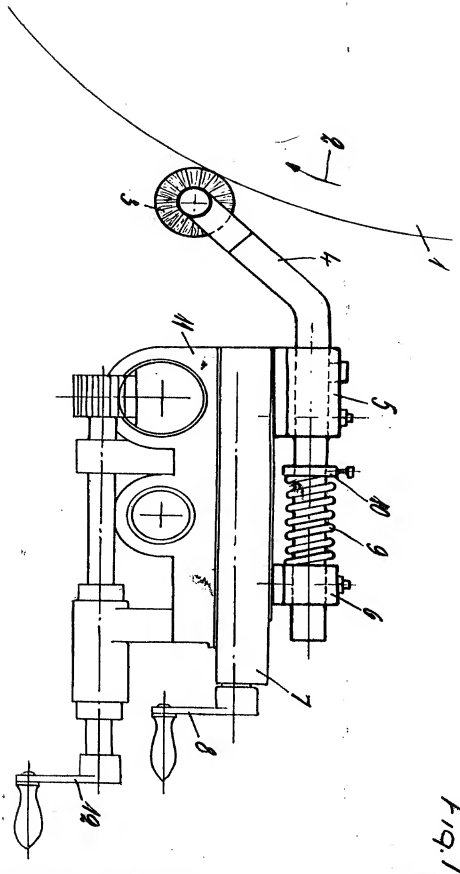

Fig. 1

Certified to be the drawings referred to in the specification hereunto annexed.
Ottawa, Canada. Sept. 11, 1947.

KARL ESBJORN EFTRING
INVENTOR
By-
Fetherstonhaugh & Co.
ATTORNEY.

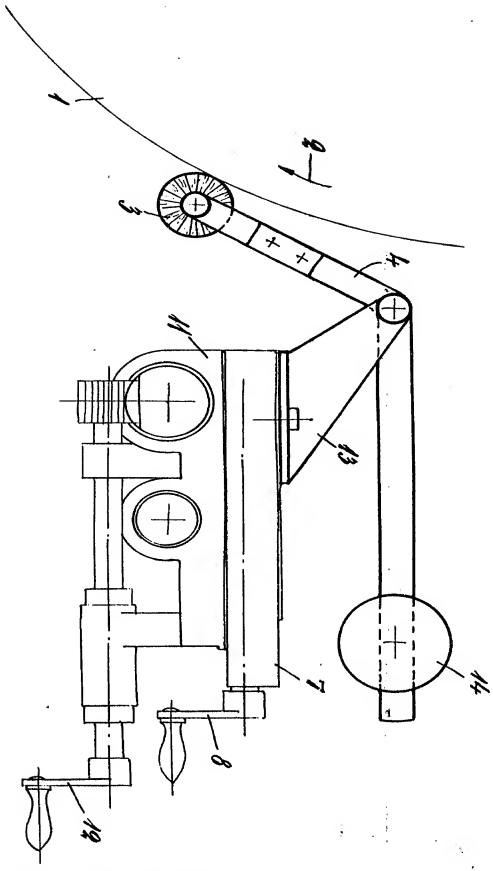

FIG. 2

Certified to be the drawings referred to in the specification hereunto annexed.
Ottawa, Canada. Sept. 11, 1947.

KARL ESBJORN EFTRING
INVENTOR

By
Fetherstonhaugh & Co.